CLAIMS:

1. A process for reducing corrosion in an MTO effluent processing system, the process comprising the steps of:
   (a) directing a product stream from an MTO reactor to a quench unit through a quench unit inlet;
   (b) contacting the product stream with a quench medium in the quench unit under conditions effective to form a light product fraction containing light olefins, a heavy product fraction containing condensed components, and a condensed pumparound stream;
   (c) adding a neutralization agent to the condensed pumparound stream to form the quench medium, wherein the quench medium has a pH greater than the pH of the condensed pumparound stream; and
   (d) injecting the quench medium into the quench unit at an injection point oriented higher on the quench unit than the quench unit inlet.

2. The process of claim 1, wherein the neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

3. The process of claim 1, wherein the quench medium has a pH of at least 6.0.

4. The process of claim 3, wherein the quench medium has a pH of at least 7.0.

5. The process of claim 1, wherein the process further comprises the step of:
   (e) monitoring the pH of the condensed pumparound stream.

6. The process of claim 5, wherein step (c) is responsive to a determination in step (e) that the pH of the condensed pumparound stream is approaching acidic conditions.

7. The process of claim 1, wherein the overhead stream is not treated with caustic in a caustic wash unit.

8. The process of claim 1, wherein the process further comprises the step of:
(e) contacting at least a portion of the overhead stream with caustic in a caustic wash unit under conditions effective to provide a caustic unit overhead stream and a caustic unit bottoms stream, wherein the caustic unit overhead stream contains a majority of the light olefins that were present in the at least a portion of the overhead stream, and wherein the caustic unit bottoms stream contains at least partially spent caustic.

9. The process of claim 8, wherein the neutralization agent comprises the at least partially spent caustic.

10. The process of claim 1, wherein the process further comprises the step of:
(e) cooling the condensed pumparound stream.

11. The process of claim 1, wherein the process further comprises the step of:
(e) cooling the quench medium.

12. The process of claim 1, wherein the conditions in step (b) are effective to form a single condensate stream, and wherein the single condensate stream is separated into the heavy product fraction and the condensed pumparound stream.

13. The process of claim 1, wherein the condensed pumparound stream is a bottoms stream.

14. The process of claim 1, wherein the condensed pumparound stream is a side draw stream.

15. The process of claim 14, wherein the heavy product fraction is a bottoms stream.

16. The process of claim 1, wherein the heavy product fraction contains methanol, the process further comprising the steps of:

(e) directing the heavy product fraction to a condensate removal unit; and

(f) subjecting the heavy product fraction in the condensate removal unit to conditions effective to separate the heavy product fraction into an overhead oxygenate stream and a water-containing stream, wherein the overhead oxygenate stream contains a majority of the methanol that was present in the heavy product fraction, and wherein the water-containing stream contains a majority of the water that was present in the heavy hydrocarbon fraction.

17. A process for reducing corrosion in an MTO reactor system, the process comprising the steps of:

(a) contacting a product stream from an MTO reactor with a quench medium in a quench unit under conditions effective to form an overhead stream comprising light olefins and a bottoms stream comprising the quench medium and condensed oxygenates;

(b) condensing a portion of the overhead stream to form a condensed stream having a pH; and

(c) contacting a neutralization agent with the condensed stream to form a treated stream having a pH greater than the pH of the condensed stream.

18. The process of claim 17, wherein the neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

19. The process of claim 17, wherein the quench medium comprises water from the product stream.

20. The process of claim 17, wherein the treated stream has a pH of at least 6.0.

21. The process of claim 20, wherein the treated stream has a pH of at least 7.0.

22. The process of claim 17, wherein the process further comprises the step of:

(d) monitoring the formation of one or more corrosion sites in an overhead stream conduit, wherein the overhead stream conduit contains the condensed stream.

23. The process of claim 22, wherein step (c) occurs upstream of the one or more corrosion sites detected in step (d).

24. The process of claim 22, wherein step (d) comprises inserting a corrosion-detection probe into an opening in the overhead stream conduit, wherein the corrosion-detection probe detects corrosion inside the overhead stream conduit.

25. The process of claim 24, wherein the corrosion-detection probe is a corrosion coupon.

26. The process of claim 24, wherein the neutralization agent forms a film on an inner surface of the overhead stream conduit.

27. The process of claim 17, wherein at least a portion of the overhead stream contacts caustic in a caustic wash unit under conditions effective to provide a caustic unit overhead stream and a caustic unit bottoms stream, wherein the caustic unit overhead stream contains a majority of the light

olefins that were present in the at least a portion of the overhead stream, and wherein the caustic unit bottoms stream comprises at least partially spent caustic.

28. The process of claim 27, wherein and neutralization agent comprises the at least partially spent caustic.

29. The process of claim 17, wherein the condensed stream forms in a conduit.

30. The process of claim 17, wherein the condensed stream forms in a knockout drum.

31. A process for reducing corrosion in an MTO effluent processing system, the process comprising the steps of:

(a) contacting a product stream from an MTO reactor with a quench medium in a quench unit under conditions effective to form a light product fraction comprising light olefins and a heavy product fraction comprising the quench medium and condensed oxygenates;

(b) compressing at least a portion of the light product fraction to form a compressed stream;

(c) cooling at least a portion of the compressed stream under conditions effective to form a condensed stream having a pH; and

(d) contacting a neutralization agent with at least a portion of the condensed stream to form a treated stream having a pH greater than the pH of the condensed stream.

32. The process of claim 31, wherein the neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

33. The process of claim 31, wherein the treated stream has a pH of at least 6.0.

34. The process of claim 33, wherein the treated stream has a pH of at least 7.0.

35. The process of claim 31, wherein the process further comprises the step of:
(e) monitoring the pH of the condensed stream.

36. The process of claim 35, wherein step (d) is responsive to a determination in step (e) that the pH of the condensed stream is approaching acidic conditions.

37. The process of claim 35, wherein at least a portion of the light product fraction, at least a portion of the condensed stream or at least a portion of the treated stream contacts caustic in a caustic wash unit under conditions effective to provide a caustic unit overhead stream and a caustic unit bottoms stream, wherein the caustic unit overhead stream comprises a majority of the light olefins that were present in the at least a portion of the light product fraction, the at least a portion of the condensed stream or the at least a portion of the treated stream, wherein the caustic unit bottoms stream comprises at least partially spent caustic, and wherein the neutralization agent comprises the at least partially spent caustic.

38. A process for reducing corrosion in an MTO reactor system, the process comprising the steps of:

(a) contacting a product stream from an MTO reactor with a quench medium in a quench unit under conditions effective to form a first overhead stream and a first bottoms stream, wherein the first overhead stream comprises light olefins, and wherein the first bottoms stream comprises the quench medium and condensed oxygenates;

(b) directing at least a portion of the first bottoms stream to a condensate stripper;

(c) heating the at least a portion of the first bottoms stream in the condensate stripper under conditions effective to form a second overhead stream and a second bottoms stream, wherein the second overhead stream contains recovered oxygenates, and wherein the second bottoms stream contains stripped quench medium;

(d) partially vaporizing at least a portion of the second bottoms stream to form a vaporized phase and a liquid phase, wherein the liquid phase has a pH; and

(e) adding a neutralization agent to the liquid phase to form a treated stream having a pH greater than the pH of the liquid phase.

39. The process of claim 38, wherein the neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

40. The process of claim 38, wherein the treated stream has a pH of at least 6.0.

41. The process of claim 40, wherein the treated stream has a pH of at least 7.0.

42. The process of claim 38, wherein the process further comprises the step of:
(f) directing the treated stream and the vaporized stream into the condensate stripper.

43. The process of claim 42, the process further comprising the step of:
(g) monitoring the pH of the liquid phase.

44. The process of claim 43, wherein step (e) is responsive to a determination in step (g) that the pH of the liquid phase is approaching acidic conditions.

45. The process of claim 38, wherein the first overhead stream is not treated with caustic in a caustic wash unit.

46. The process of claim 38, wherein at least a portion of the first overhead stream contacts caustic in a caustic wash unit under conditions effective to provide a third overhead stream and a third bottoms stream, wherein the third overhead stream contains a majority of the light olefins that were present in the at least a portion of the first overhead stream, wherein the third bottoms stream comprises at least partially spent caustic, and wherein the neutralization agent comprises the at least partially spent caustic.

47. A process for reducing corrosion in an MTO effluent processing system, the process comprising the steps of:
(a) contacting a product stream from an MTO reactor with a quench medium in a quench unit under conditions effective to form a first overhead stream and a first bottoms stream, wherein the first overhead stream comprises light olefins, and wherein the first bottoms stream comprises the quench medium and condensed oxygenates;
(b) directing at least a portion of the first bottoms stream to a condensate stripper;
(c) heating the at least a portion of the first bottoms stream in the condensate stripper under conditions effective to form a second overhead

stream and a second bottoms stream, wherein the second overhead stream contains recovered oxygenates, and wherein the second bottoms stream contains stripped quench medium;

(d) cooling the second overhead stream under conditions effective to partially condense the second overhead stream and form a condensed stream having a pH; and

(e) contacting a neutralization agent with the condensed stream to form a treated stream, wherein the treated stream has a pH greater than the pH of the condensed stream.

48. The process of claim 47, wherein the neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

49. The process of claim 47, wherein the treated stream has a pH of at least 6.0.

50. The process of claim 49, wherein the treated stream has a pH of at least 7.0.

51. The process of claim 47, wherein the process further comprises the step of:

(f) monitoring the pH of the condensed stream.

52. The process of claim 51, wherein step (e) is responsive to a determination in step (f) that the pH of the condensed stream is approaching acidic conditions.

53. The process of claim 47, wherein at least a portion of the first overhead stream contacts caustic in a caustic wash unit under conditions effective to provide a third overhead stream and a third bottoms stream, wherein the third overhead stream contains a majority of the light olefins that were present in the at least a portion of the first overhead stream, wherein the

third bottoms stream contains at least partially spent caustic, and wherein the neutralization agent comprises the at least partially spent caustic.

54. The process of claim 47, wherein the process further comprises the step of:
(f) monitoring the formation of one or more corrosion sites in a second overhead stream conduit, wherein the second overhead stream conduit contains the condensed stream.

55. The process of claim 54, wherein step (e) occurs upstream of the one or more corrosion sites detected in step (f).

56. The process of claim 54, wherein step (f) comprises inserting a corrosion-detection probe into an opening in the second overhead stream conduit, wherein the corrosion-detection probe detects corrosion inside the second overhead stream conduit.

57. The process of claim 56, wherein the corrosion-detection probe is a corrosion coupon.

58. The process of claim 54, wherein the neutralization agent forms a film on an inner surface of the second overhead stream conduit.

59. A process for reducing corrosion of a conduit line having an inner surface, the process comprising the steps of:
(a) directing an first stream having a pH through the conduit line, wherein the conduit line is a component of an MTO effluent processing system;
(b) monitoring corrosion of the conduit line; and
(c) injecting a neutralization agent through an inlet in the conduit line to form a treated stream having a pH greater than the pH of the first stream, wherein the injecting is responsive to a determination in step (b)

that corrosion has developed at a corrosion point in the conduit line, and wherein the inlet is oriented upstream of the corrosion point.

60. The process of claim 59, wherein step (b) comprises inserting a corrosion-detection probe into an opening in the conduit line, wherein the corrosion-detection probe detects corrosion in the conduit line.

61. The process of claim 59, wherein the neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

62. The process of claim 59, wherein the neutralization agent forms a film on the inner surface of the conduit line.

63. The process of claim 59, wherein the conduit line is in fluid communication between a quench unit overhead outlet and a compressor inlet.

64. The process of claim 59, wherein the conduit line is in fluid communication between a compressor outlet and a knockout drum inlet.

65. The process of claim 59, wherein the conduit line is in fluid communication between a condensate stripper overhead outlet and a knockout drum inlet.

66. The process of claim 59, wherein the conduit line is in fluid communication between a condensate stripper bottoms outlet and a condensate stripper side inlet.

67. The process of claim 59, wherein the treated stream has a pH of at least 6.0.

68. The process of claim 67, wherein the treated stream has a pH of at least 7.0.

69. A process for reducing corrosion in an MTO effluent processing system, the process comprising the steps of:

(a) contacting a product stream from an MTO reactor with a quench medium in a quench unit under conditions effective to form an overhead stream and a bottoms stream, wherein the overhead stream contains light olefins, and wherein the bottoms stream contains water and condensed oxygenates,

(b) withdrawing condensed components having a pH from the quench unit through a first outlet in the quench unit;

(c) contacting a first neutralization agent with the condensed components to form a first treated stream, wherein the first treated stream has a pH greater than the pH of the condensed components; and

(d) introducing the first treated stream into a first inlet in the quench unit, wherein the first inlet is located at a position higher on the quench unit than the first outlet, and wherein the first treated stream acts as the quench medium in step (a).

70. The process of claim 69, wherein the process further comprises the step of:

(e) cooling the condensed components.

71. The process of claim 69, wherein the process further comprises the step of:

(e) cooling the treated stream.

72. The process of claim 69, wherein the process further comprises the steps of:

(e) withdrawing additional condensed components having a pH from the quench unit through a second outlet in the quench unit, wherein the second outlet is located at a position higher on the quench unit than the first outlet; and

(f) introducing the additional condensed components into a second inlet in the quench unit, wherein the second inlet is located at a position higher on the quench unit than the second outlet, and wherein the additional condensed components act as the quench medium in step (a).

73. The process of claim 72, wherein the process further comprises the step of:

(g) cooling the additional condensed components.

74. The process of claim 72, wherein the process further comprises the step of:

(h) contacting a second neutralization agent with the additional condensed components to form a second treated stream, wherein the second treated stream has a pH greater than the pH of the additional condensed components.

75. The process of claim 74, wherein the process further comprises the step of:

(i) cooling the second treated stream.

76. The process of claim 74, wherein the first and second neutralization agents are the same.

77. The process of claim 69, wherein the process further comprises the steps of:

(e) withdrawing additional condensed components having a pH from the quench unit through a second outlet in the quench unit, wherein the second outlet is located at a position higher on the quench unit than the first outlet; and

(f) contacting a second neutralization agent with the additional condensed components to form a second treated stream, wherein the second treated stream has a pH greater than the pH of the additional condensed components; and

(g) introducing the second treated stream into a second inlet in the quench unit, wherein the second inlet is located at a position higher on the

quench unit than the second outlet, and wherein the second treated stream acts as the quench medium in step (a).

78. The process of claim 77, wherein the first neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

79. The process of claim 78, wherein the second neutralization agent is the same as the first neutralization agent.

80. The process of claim 77, wherein the process further comprises the step of:
(h) cooling the additional condensed components.

81. The process of claim 77, wherein the process further comprises the step of:
(h) cooling the second treated stream.

82. The process of claim 77, wherein the second outlet is located at a position higher on the quench unit than the first inlet.

83. The process of claim 77, wherein the first inlet is located at a position higher on the quench unit than the second outlet.

84. The process of claim 77, wherein the second treated stream has a pH of at least 6.0.

85. The process of claim 84, wherein the second treated stream has a pH of at least 7.0.

86. The process of claim 69, wherein the first neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

87. The process of claim 69, wherein the first treated stream has a pH of at least 7.0.

88. The process of claim 87, wherein the first treated stream has a pH of at least 7.0.

89. The process of claim 69, wherein the process further comprises the step of:
(e) monitoring the pH of the condensed components.

90. The process of claim 89, wherein step (c) is responsive to a determination in step (e) that the pH of the condensed components is approaching acidic conditions.

91. The process of claim 69, wherein the overhead stream is not treated with caustic in a caustic wash unit.

92. The process of claim 69, wherein the process further comprises the step of:
(e) contacting at least a portion of the overhead stream with caustic in a caustic wash unit under conditions effective to provide a caustic unit overhead stream comprising light olefins and a caustic unit bottoms stream comprising at least partially spent caustic, wherein the first neutralization agent comprises the at least partially spent caustic.

93. The process of claim 77, wherein the process further comprises the step of:
(h) contacting at least a portion of the overhead stream with caustic in a caustic wash unit under conditions effective to provide a caustic unit overhead stream comprising light olefins and a caustic unit bottoms stream comprising at least partially spent caustic, wherein the second neutralization agent comprises the at least partially spent caustic.

94. The process of claim 93, wherein the first neutralization agent comprises the at least partially spent caustic.

95. A process for reducing corrosion in a conduit line having an inner surface, the process comprising the steps of:

(a) directing a first stream having a pH through the conduit line, wherein the conduit line is part of an MTO effluent processing system;

(b) monitoring the pH of the first stream; and

(c) contacting a neutralization agent with the first stream to form a treated stream having a pH greater than the pH of the first stream, wherein the contacting is responsive to a determination in step (b) that the pH of the first stream has passed a predetermined threshold.

96. The process of claim 95, wherein step (b) comprises monitoring a corrosion coupon.

97. The process of claim 96, wherein step (b) occurs at a monitoring point, and wherein step (c) occurs upstream of the monitoring point.

98. The process of claim 95, wherein the first neutralization agent is selected from the group consisting of: caustic, ammonium hydroxide, potassium hydroxide, ammonia and amines.

99. The process of claim 95, wherein the conduit line is oriented in a quench unit pumparound system.

100. The process of claim 95, wherein the conduit line is oriented in a condensate stripper system.

101. The process of claim 95, wherein the conduit line is oriented in a condensate stripper reboiler system.

102. The process of claim 95, wherein the conduit line is oriented in a condensate stripper condenser system.

103. The process of claim 95, wherein the conduit line is oriented in a compression system.

104. The process of claim 95, wherein the first stream comprises a light product fraction from a quench unit.

105. The process of claim 95, wherein the first stream comprises a heavy product fraction from a quench unit.

106. The process of claim 95, wherein the first stream comprises a quench unit pumparound stream.

107. The process of claim 95, wherein the first stream comprises an oxygenate stream from a condensate stripper.

108. The process of claim 95, wherein the first stream comprises a stripped water-containing stream from a condensate stripper.

109. The process of claim 95, wherein the first stream comprises a compressed stream from an MTO compressor system.

110. A process for reducing corrosion in an MTO effluent processing system, the process comprising the steps of:

(a) directing a product stream from an MTO reactor to a condensing unit through a condensing unit inlet;

(b) contacting the product stream with a treated stream in the condensing unit under conditions effective to form a light product fraction containing light olefins, a heavy product fraction containing condensed components, and a condensed pumparound stream;

(c) adding a neutralization agent to the condensed pumparound stream to form the treated stream, wherein the treated stream has a pH greater than the pH of the condensed pumparound stream; and

(d) injecting the treated stream into the condensing unit at an injection point oriented higher on the condensing unit than the condensing unit inlet.

111. The process of claim 110, wherein the process further comprises the step of:

(e) cooling the condensed pumparound stream.

112. The process of claim 110, wherein the process further comprises the step of:

(e) cooling the treated stream.